VIP AND PACAP mRNA AND BINDING SITES IN THE DEVELOPING NERVOUS SYSTEM. J.M. Hill, S.K. McCune and P. Gressens, Lab. of Developmental Neurobiology, NICHD, NIH and Dept. of Pediatric Medicine, Childrens Natl. Med. Ctr., George Washington Univ., Washington, D.C. 20010.

In addition to having neurotransmitter and neuromodulator functions in the CNS, in vitro studies have demonstrated that VIP has mitogenic and growth factor properties. Moreover, in vivo work has shown that the inhibition of VIP functons in rat neonates results in a retardation in the appearance of several complex motor behaviors. In order to assess the role of VIP in the ontogeny of the nervous system, we have traced the mRNA for VIP and VIP binding sites throughout CNS development. This study has revealed that VIP binding sites are present at the earliest ages observed, that receptor distribution is dynamic, and that two distinct VIP receptor subtypes make transient appearances during development and their occurrence is related to important ontogenic events. However, we found no evidence of VIP mRNA in the prenatal brain. A potential explanation is that PACAP, a neuropeptide with sequence homology to VIP and which can act at VIP receptors in vitro, may be the prenatal ligand acting on the VIP binding sites. In the present study we are tracing the mRNA and binding sites for PACAP throughout neural development in order to estimate this possibility. The results obtained thus far suggest that PACAP functions independently from VIP in the brain.

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